(19) World Intellectual Property Organization International Bureau



(43) International Publication Date 10 February 2005 (10.02.2005)

(10) International Publication Number WO 2005/012687 A1

(51) International Patent Classification7:

E21B 33/13

TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM,

(21) International Application Number:

PCT/GB2004/003154

(22) International Filing Date: 19 July 2004 (19.07.2004)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data: 60/489,917

25 July 2003 (25.07.2003) US

- (71) Applicants (for all designated States except US): BP EXPLORATION OPERATING COMPANY LIM-ITED [GB/GB]; Chertsey Road, Sunbury on Thames, Middlesex TW16 7BP (GB). BP CORPORATION NORTH AMERICA INC [US/US]; 4101 Winfield Road, Warrenville, IL 60555 (US).

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GII, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Declarations under Rule 4.17:

- as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii)) for the following designations AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ,

a solid particulate bridging material having an average particle diameter of 25 to 2000 microns and a concentration of at least 0.5 pounds per barrel; (b) increasing the pressure in the wellbore to above the initial fracture pressure of the formation and a religious and are induced in the formation and a substantially fluid impermeable bridge comprising the solid particulate bridging material and the fluid loss additive(s) is formed at or near the mouth of the fractures thereby strengthening the formation; (c) thereafter continuing to drill the wellbore with the pressure in the wellbore maintained at above the initial fracture pressure of the formation and below the breakdown pressure of the strengthened formation.